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May we not in conclusion, fittingly adopt the words of a modern seer, with him agreeing that "between two opposing tendencies, one urging to variation, the other to permanence, (for nature herself is half radical, half conservative) the language of birds has grown from rude beginnings to its present beautiful diversity, and whoever lives a century of milleniums hence, will listen to music such as we in this day can only dream of. Inappreciably but ceaselessly the work goes on. Here and there is born a master singer, a feathered genius, and every generation makes it own addition to the glorious inheritance!"

A MONTH IN THE EASTERN PHILLIPINES.

BY J. B. STEERE.

WE spent the last days of March, 1888, at Cebu, in packing our collections from the Central islands. We were fortunate in finding an American vessel in port, sailing to Boston, and nearly loaded with sugar and manila hemp, and shipped home several cases of bird skins and other valuable and perishable collections by her, while the bulkier part, corals and sea shells, were left to be forwarded in the same way at a later date. We then took passage on the little Spanish steamer "Gravina," for Catbalogan on the island of Samar, the most eastern of the archipelago. The weather was of the ordinary Philippine kind, calm and with smooth seas. We left Cebu about noon, passed by the northern end of Bojol, and were then in sight of the mountains of Leite, and we spent the evening in coasting up the west shore of that island. The next morning when we waked up we were lying at anchor in front of the town of Catbalogan. We were started out of our berths a little sooner than common by an outcry among the Spanish passengers, and a call for the "Naturalistas Americanos." Hurrying into one of the passage ways, I found a Spanish military officer

standing in a tragic attitude, with his sword thrust through a poor little centipede, which he had pinned to the floor.

The harbor of Catbalogan is formed by several small islands but is not considered safe in storms from the northwest. The town is on low ground near the sea, and has about ten thousand inhabitants, and shows the usual church and parish house with a governor's and other officer's residences, for it is the capital of a province; in addition to the usual streets of Indian houses supported on posts in the ordinary way. The town had an unmistakable appearance of age and unthrift, though the little square in front of the church was decorated with triumphal arches and flowers, for we had brought a new governor with us, the same who had so courageously attacked the centipede in the morning.

The island of Samar is some one hundred and twenty miles long, by thirty or forty broad, and is said to have two hundred thousand inhabitants. Its native name is *Ibabao*, which means *up above*, and we were certain before we had left it that it was well named. It is very mountainous and steep so that a great part of it is uncultivable. The exports are chiefly of manila hemp which is sent to Cebu or Manila for shipment.

The captain of the steamer landed us and our goods on the beach and steamed away, and we were left again to find a home among strangers. There was no hotel, as is usual in such towns, and the people were too busy with the new governor to care for us, and it looked for some time as if we might go hungry and without shelter unless we took refuge in the *tribunal*, the court-house, jail and common assembly room of the Indian population, but after noon we found an empty house and making a bargain with the owner, and hiring a young Indian for cook, we moved in that night. Our house was out on the borders of the town near the hills. It had a room large enough to hold our hammocks, and another back one open on all sides, serving for a kitchen, dining-room and a place in which to skin birds. The hills covered with second growth were just behind us and we could see unmistakable patches of virgin forest on the mountain sides, two or three miles far-

ther back and we concluded to make the place our headquarters for the month we had devoted to this part of the island. The next morning I dressed and started to the governor's residence, to present our passports and other papers, but the rest of the party, anxious to see what could be found in this new field, were in the hills before my arrival, and the reports of their heavy guns were rolling down upon the town as if it was besieged. A squad of Indian soldiers were hurried out after them, and made out to capture one of the party, and march him in, just after I had shown our papers, when he was released without ceremony.

The birds, in the jungle of second growth near town, were, many of them, the same we had found in other parts of the group, but the first day's hunt proved that we had reached a new and distinct location.

A number of birds, including the large Philippine crow, the yellow oriole, the black, and bald headed starlings, the white collared kingfisher, one or two sun birds, the fruit-thrushes, and the little scarlet breasted parrots, and many others, are such common residents about the Indian towns, and especially in the coco groves, and are so rarely found in the virgin forest, that we learned to expect them everywhere we went. Their distribution may have depended in part upon the habit the natives have of capturing these birds and carrying them from place to place. Since the islands have been inhabited there can be no doubt that man has been the chief agent of distribution, and of much greater importance than storms, floating timber, etc., all taken together.

We had, at a step, passed from the region where the dry season was at its height in Negros, Cebu, and Bojol, to where the rainy season was beginning. The mountains behind were much of the time enveloped in dark mists and thunder clouds and one or two showers had already reached down to the town. The steep hills between us and the true forest were wet and slippery, and we found our best means of reaching the hunting grounds was to employ native boatmen to pilot us up the little tidal river in their canoes to the foot of the mountains. The

authorities seem to have become discouraged in trying to make roads in such a country, and though a bridge had been built over the river, the road after running along the beach for two miles, had been abandoned, and all the commerce of the place is carried in boats and on men's backs. The mountains were heavily timbered and very steep. Several mountain streams formed the river, these flowing along narrow ravines, running for some distance over flat-ledges of rock and then breaking over perpendicular precipices in waterfalls into deep pools below. We found the beds of these shallow streams our best paths, and adopting the native *alpargate*, a canvas sandal with hemp sole, we spent our time in following their beds, shooting from the overhanging trees, and the mountain sides above. It was still dry at the town, though it rained nearly every day in the mountains, but usually in the afternoon, and everything was dripping with moisture. We seemed to be in the rain clouds themselves. The land leeches were swarming and very troublesome, even making their way through the meshes of our stockings. But with all our discouragements we were rapidly adding species new to our collection, and new to science. Among these were a new squirrel, a new broad-bill of the genus *Sarcophanops*, first described from Basilian, two new woodpeckers, and another fruit-thrush, and a little crow, these two latter staying in the mountains and not interfering with their relatives about the town below. A great horn-bill proved to be distinct from its allies in Mindanao and Luzon.

A division of the party took a native boat, and pushed down to the south into the strait of San Juanico, between Samar and Leite, and stopped for ten days at the village of Babatgnon, on the latter island. The fauna appeared to be identical with that from Samar as might be expected, the strait being in many places not over a mile or two in width and this frequently narrowed by small islands.

Toward the latter part of our stay, the rains came farther and farther down the mountain side, and storms became frequent at the town itself, and so continuous in the mountains as to hinder us considerably in our work. Reptiles were abund-

ant, crocodiles were found in the river we used as a highway, and our Indian boatmen would devoutly cross themselves and say their prayers before wading into the deeper places. Nearly every day we started the large plant-eating lizard, called *ibit*, from the bushes on the sides of the river, and they frequently made directly across the stream in front of us, not swimming in the water, but moving rapidly over the surface, apparently chiefly by strokes of the broad flattened tail and of the hind feet, the head and fore part of the body being elevated high in the air. This is much nearer the position of birds in swimming than that of most reptiles. Perhaps some of the fossil reptilia moved in this way. We encountered two or three cobra de capellos in our hunting. One of them, an immense fellow, lay coiled behind a big rock with its head raised and neck flattened in the traditional style. The *Naturalista Americano*, was within fair biting distance of him as he turned the corner of the rock, and was so frightened that he allowed the snake to drop down and glide out of sight. He did not do much collecting the rest of that day, but spent most of his time in looking out for snakes. There is no doubt but that the cobra, hearing the noise, was looking out for food, but finding the game too big to swallow, got out of the way without striking. One of the under officers at Catbalogan had a large python which he had kept for a number of years in a cage. The snake was about fifteen feet long, and as thick as a man's thigh. He was fed once a month, and his appetite demanded a good sized dog at a meal. As the time for his dinner arrived, he became active, gliding about the cage with head raised and when the trap door was lifted and the dog dropped in it was seized before it touched the bottom, and a coil being thrown about it, it was crushed to death before it had time to howl. After his meal the snake lay for weeks in so deep a sleep that I could not waken him by punching him with my cane. One could run over such a snake in the jungle and hardly know it. A large number of deaths undoubtedly occur in the Philippines from poisonous serpents and pythons, but from the apathy of the people but little attention is paid to it. If a person is killed in this way it is his *suerte* or fortune, just

as it is of the gains or loses on a cock fight. Remedies for snake poison abound as in other countries. One old Indian who had been to Manila and had dabbled in drugs, assured us that if he could reach the person bitten before he was quite dead he could save him by applying muriatic acid. The flying lizard, *Draco*, found here differed from those we had collected in other parts, in its larger size, and in having the under surface of the membranes bright red in color.

At the end of the month devoted to Samar and Leite, we found a little brig, built in the Philippines, and commanded by a Spaniard, loaded with manila hemp and bound for Manila. Making a bargain with the captain to land us on the island of Masbate, which lay very close to his route, we hurriedly gathered our collections and luggage together, and embarked.

ON THE DEVELOPMENT OF CALIFORNIA FOOD FISHES.

C. H. EIGENMANN.

FROM a biological standpoint the Surf Perches are the most interesting of the California fishes. The species inhabiting the shores of California are probably all well known, and the later stages of their larval development have been well treated by Agassiz, Blake and Ryder. Dr. Charles Girard was able to examine younger stages than the other writers, but he did not contribute much to our knowledge of them. Until now the ripe eggs and embryos of these fishes have not been seen. During the past two months, December and January, I have been enabled to examine many individuals of almost all the species found in San Diego Bay. In most of them I have found embryos or ripe eggs. *Micrometrus aggregatus*, on account of its abundance, the ease with which it can be caught, and the fact that different individuals of the same date have young in widely different stages of development, has proved to be the